

THE CLAIMED INVENTION IS:

1. A magnetic head comprising:
 - a.) a bottom pole;
 - b.) a writer element, said writer element comprising at least one conductive
5 coil, said coil being electrically insulated by a composition which has a
negative coefficient of thermal expansion; and
 - c.) a second insulating layer covering at least a portion of said insulating
composition.
2. The magnetic head of claim 1, wherein said insulating composition is selected
10 from the group consisting of a crystalline material, an amorphous material, and a
polycrystalline material.
3. The magnetic head of claim 2, wherein said insulating material comprises a
polycrystalline material.
- 15 4. The magnetic head of claim 3, wherein said insulating material is isotropic in its
thermal expansion properties.
5. The magnetic head of claim 3, wherein said insulating material is anisotropic in
20 its thermal expansion properties.
6. The magnetic head of claims 4 and 5, wherein said insulating material comprises
a ceramic.
- 25 7. The magnetic head of claim 4, wherein said isotropic insulating material
comprises a ceramic, said ceramic selected from the group consisting of ZrW_2O_8 ,
 HfW_2O_8 , ZrV_2O_7 , HfV_2O_7 , $\text{ZrV}_{(2-x)}\text{P}_x\text{O}_7$, $\text{ZrW}_{(2-x)}\text{Mo}_x\text{O}_8$ (wherein $x \leq 1.5$), and mixtures
thereof.

8. The magnetic head of claim 5, wherein said anisotropic insulating material comprises a ceramic, said ceramic selected from the group consisting of $\text{Zr}_2\text{PW}_{12}\text{O}_{42}$, $\text{Sc}_2(\text{WO}_4)_3$, $\text{Sc}_2(\text{MoO}_4)_3$ and mixtures thereof.
- 5 9. The magnetic head of claim 1 additionally comprising a second insulating ceramic layer positioned adjacent said coils.
- 10 10. The magnetic head of claim 9, wherein said second insulating layer comprises a ceramic.
11. The magnetic head of claim 1, wherein said head comprises a plurality of conductive coils.
12. A slider having a magnetic read/write head, said magnetic read/write head comprising:
- 15 a.) a base coat;
- b.) a reader element comprising a transducer;
- c.) a writer element, said writer element comprising at least one conductive coil, said coil being electrically insulated by a composition which has a negative coefficient of thermal expansion; and
- 20 d.) an overcoat.
13. The slider of claim 12, wherein said reader element is positioned adjacent said base coat.
- 25 14. The slider of claim 13, wherein the slider additionally comprises top and bottom shields and said reader element is positioned between respective top and bottom shields.
15. The slider of claim 12, wherein said base coat comprises a ceramic which is isotropic in its thermal expansion properties.
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16. The slider of claim 12, wherein said writer element has a writer gap defined by said plurality of insulated coils, said upper shared pole, and said top pole.
- 5 17. The slider of claim 16, wherein said writer element is positioned adjacent said base coat.
18. The slider of claim 12, wherein said overcoat comprises ceramic which is isotropic in its thermal expansion properties.
- 10 19. The slider of claim 12, wherein said insulating composition is selected from the group consisting of a crystalline material, an amorphous material, a polycrystalline material.
- 15 20. The slider of claim 19, wherein said insulating material comprises a polycrystalline material.
21. The slider of claim 20, wherein said insulating material is isotropic in its thermal expansion properties.
- 20 22. The slider of claim 20, wherein said insulating material is anisotropic in its thermal expansion properties.
23. The slider of claims 21 and 22, wherein said insulating material comprises a ceramic.
- 25 24. The slider of claim 21, wherein said isotropic insulating material comprises a ceramic, said ceramic selected from the group consisting of ZrW_2O_8 , HfW_2O_8 , ZrV_2O_7 , HfV_2O_7 , $\text{ZrV}_{(2-x)}\text{P}_x\text{O}_7$, $\text{ZrW}_{(2-x)}\text{Mo}_x\text{O}_8$ (wherein $x \leq 1.5$), and mixtures thereof.
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25. The slider of claim 22, wherein said anisotropic insulating material comprises a ceramic, said ceramic selected from the group consisting of $\text{Zr}_2\text{PW}_2\text{O}_{12}$, $\text{Sc}_2(\text{WO}_4)_3$, $\text{Sc}_2(\text{MoO}_4)_3$ and mixtures thereof.
- 5 26. The slider of claim 12 additionally comprising a second insulating ceramic layer positioned adjacent said coils.
27. The slider of claim 26, wherein said second insulating layer comprises a ceramic.
- 10 28. The slider of claim 12, wherein said magnetic read/write head comprises a plurality of coils.
29. A slider having a magnetic head, said magnetic head comprising:
- 15 a.) a reader element comprising a transducer;
- b.) a writer element comprising at least one conductive coil; and
- c.) at least one insulating element, said insulating element comprising a composition having a negative coefficient of thermal expansion.
30. The slider of claim 29, wherein said insulating element electrically insulates said
- 20 writer element conductive coil.
31. The slider of claim 29 wherein said writer element comprises a plurality of conductive coils, wherein said insulating element electrically insulates said conductive coils.
- 25 32. The slider of claim 31 additionally comprising a second insulating element, said second insulating element is positioned adjacent said conductive coils.
33. The slider of claim 32 wherein said second insulating element comprises a
- 30 ceramic.

34. The slider of claim 29, wherein said insulating element is positioned adjacent said conductive coils.

5 35. The slider of claim 29 wherein said insulating element comprises a slider base coat.

36. The slider of claim 29 wherein said insulating element comprises a slider overcoat.

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37. The slider of claim 35 wherein said writer element is positioned adjacent said base coat.

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38. The slider of claim 36 and 37 wherein said insulating element comprises a polycrystalline material.

39. The slider of claim 38 wherein said insulating element is isotropic in its thermal expansion properties.

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40. The slider of claim 38 wherein said insulating element is anisotropic in its thermal expansion properties.

41. The slider of claim 29 wherein at least one layer of said writer element includes said insulating element.

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42. The slider of claim 29 wherein at least one layer of said reader element includes said insulating element.